DEPARTMENT of ENVIRONMENTAL SERVICES Water Supply & Pollution Control Division - Biology Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: SPECTACLE POND	Lake Area (ha):	18.53
Town: GROTON	Maximum depth (m):	11.8
County: Grafton	Mean depth (m):	3.6
River Basin: Merrimack	Volume (m³):	659500
Latitude: 43°42'37" N	Relative depth:	2.5
Longitude: 71°49'41" W	Shore configuration:	1.70
Elevation (ft): 820	Areal water load (m/yr):	4.58
Shore length (m): 2600	Flushing rate (yr^{-1}) :	1.30
Watershed area (ha): 139.8	P retention coeff.:	0.67
<pre>% watershed ponded: 0.0</pre>	Lake type: natural	w/dam

BIOLOGICAL:	22 January 1997	15 August 1996
DOM. PHYTOPLANKTON (% TOTAL) #1	DINOBRYON 60%	RHIZOSOLENIA 65%
#2	(ALL ALGAE SPARSE)	ASTERIONELLA 15%
#3		TABELLARIA 10%
PHYTOPLANKTON ABUNDANCE (units/mL)		
CHLOROPHYLL-A (µg/L)		5.12
DOM. ZOOPLANKTON (% TOTAL) #1	SPARSE - NO DOMINANT	BOSMINA 22%
#2		CALANOID COPEPOD 19%
#3		HOLOPEDIUM 17%
ROTIFERS/LITER	2	7
MICROCRUSTACEA/LITER	13	29
ZOOPLANKTON ABUNDANCE (#/L)	15	36
VASCULAR PLANT ABUNDANCE		Scattered
SECCHI DISK TRANSPARENCY (m)		6.5
BOTTOM DISSOLVED OXYGEN (mg/L)	8.2	0.0
BACTERIA (E. coli, #/100 ml) #1		< 1
#2		
#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 7.0 Hypolimnion volume (m^3) : 1400 Anoxic volume (m^3) : 2900

CHEMICAL:			SPECTACLE GROTON	E POND	
	22 January 1997		15 /	August 1996	
DEPTH (m)	3.0	6.0	3.0	8.0	11.0
pH (units)	6.0	5.5	6.0	5.6	6.2
A.N.C. (Alkalinity)	1.5	1.1	1.1	2.2	7.7
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		< 0.05
TOTAL KJELDAHL NITROGEN	0.26	0.20	0.16	0.18	0.74
TOTAL PHOSPHORUS	0.011	0.009	0.008	0.010	0.023
CONDUCTIVITY (µmhos/cm)	18.8	19.8	18.5	20.9	25.8
APPARENT COLOR (cpu)	10	10	5	10	50
MAGNESIUM			0.33		
CALCIUM			1.2		
SODIUM			< 1.0		
POTASSIUM			< 0.40		
CHLORIDE	< 2	< 2	< 2		< 2
SULFATE	4	4	4		3
TN : TP	24	22	20		32
CALCITE SATURATION INDEX			5.2		

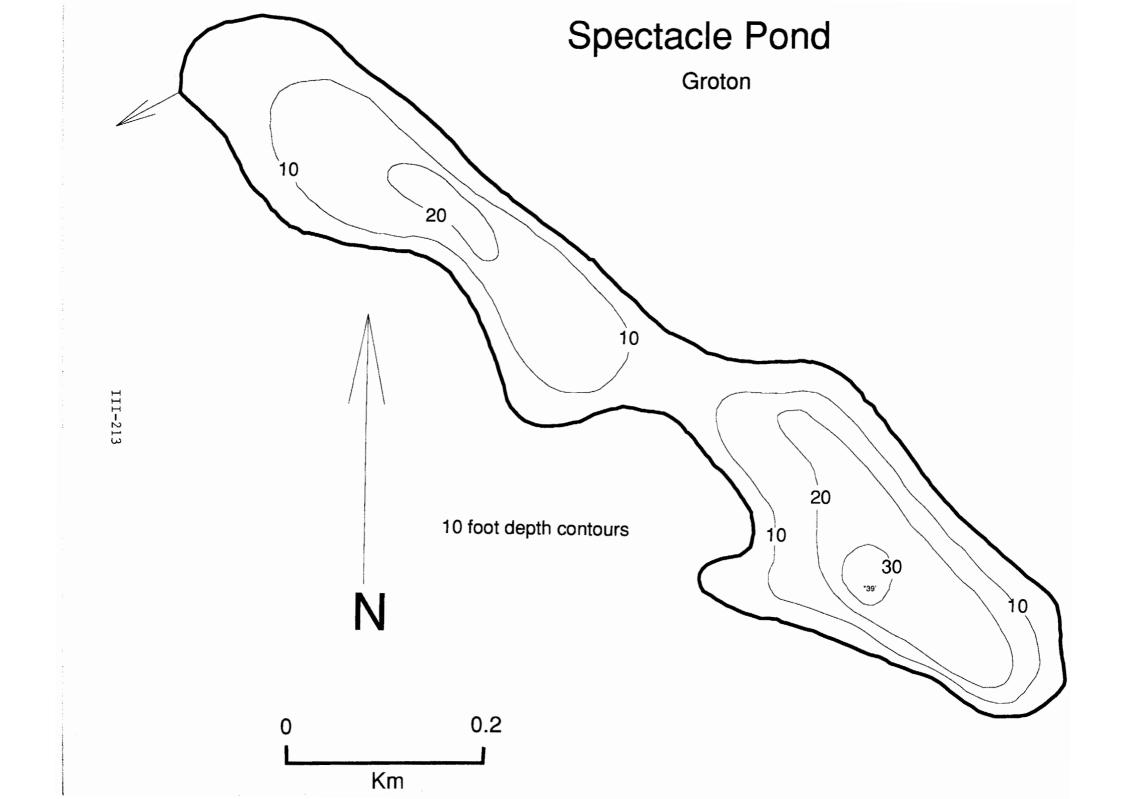
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1996

D.O.	s.D.	PLANT	CHL	TOTAL	CLASS
4	1	1	1	7	Meso.

- COMMENTS:

 Spectacle Pond was previously surveyed and classified in 1983. The major difference between the two years was in the bottom dissolved oxygen level during the summer. In 1996, there was no dissolved oxygen below 9 meters. In 1983, the dissolved oxygen was above 8 mg/L at 9 meters, and was 3.7 mg/L at 11 meters. This change resulted in moving Spectacle Pond from an oligotrophic to a mestorophic rating. NOTE: one less trophic point in 1996 and the pond would have remained oligotrophic. The chlorophyll was up slighlty and the water clarity was down slighlty in 1996 as compared to 1983.
 - 2. The outlet of Spectacle Pond has been sampled each spring and fall since 1983 as part of DES' acid rain monitoring program. There has been no trend in pH and a slightly increasing trend in ANC (from 0 to 1) over the monitoring period.
 - 3. Spectacle Pond is a moderately acidic, clear-water pond with low ANC and low levels of ions.



FIELD DATA SHEET

TOWN: GROTON

LAKE: SPECTACLE POND

DATE: 08/15/96 WEATHER: OVERCAST, HAZY SUN, WARM

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DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
0.1	23.0	9.2	107 %
1.0	23.0	9.2	107 %
2.0	23.0	9.2	107 %
3.0	22.0	9.2	105 %
4.0	22.0	9.2	105 %
5.0	22.0	9.3	106 %
6.0	22.0	9.5	108 %
7.0	18.8	8.2	86 %
8.0	16.0	2.5	25 %
9.0	13.1	0.0	0 %
10.0	10.5	0.0	0 %
11.0	10.5	0.0	0 %
		1000	

6.5 SECCHI DISK (m):

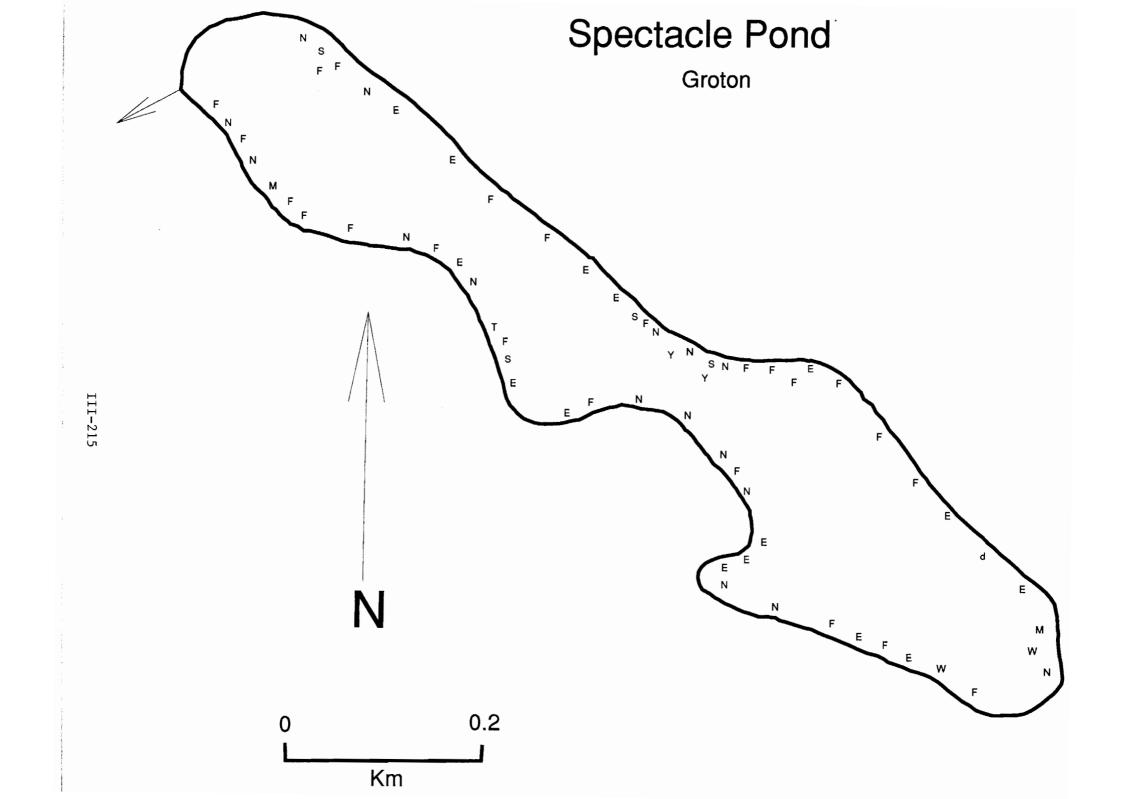
COMMENTS: 1. The entire hypolimnion

BOTTOM DEPTH (m): 11.6 (below 9.8 m) was anoxic.

TIME: 1230 2. The crystal clear water

resulted in a deep thermocline (at 7m).

*Dissolved oxygen values are in mg/L



AQUATIC PLANT SURVEY

LAK	E: SPECTACLE POND	TOWN: GROTON	DATE: 08/15/96	
Кеу	PLANT NAME		ABUNDANCE	
	GENERIC	COMMON	ABUNDANCE	
N	Nymphaea	White water lily	Sparse	
S	Sparganium	Bur reed	Sparse	
F	Nymphoides cordatum	Floating heart	Scattered	
E	Eriocaulon septangulare	Pipewort	Sparse	
Y	Nuphar	Yellow water lily	Sparse	
d	Dulichium arundinaceum	Three-way sedge	Sparse	
M	Myriophyllum humile	Water milfoil	Sparse	
W	Potamogeton spp.	Thin-leaved pondweed	Sparse	
Т	Typha	Cattail	Sparse	
		V		

OVERALL ABUNDANCE: Scattered

GENERAL OBSERVATIONS:

- 1. Good boat launch site.
- 2. Motors are prohibited.
- 3. Macrophytes were scattered around the shoreline.
- 4. Secondary productivity (zooplankton numbers) was low.